

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 6,867,645 B1
APPLICATION NO. : 09/937680
DATED : March 15, 2005
INVENTOR(S) : Ansari et al.

Page 1 of 5

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

The title page showing the illustrative figure should be deleted to be replaced with the attached title page.

The drawing sheets, (1, 2, and 6) consisting of Figs. 1, 2, 3, 4 and 9, should be deleted to be replaced with the drawing sheets, consisting of Figs. 1, 2, 3, 4 and 9, as shown on the attached pages.

Drawings:

On the title page and in FIG. 1, in the power supply 102, delete the upper “-” sign and insert -- + --.

On the title page and in FIG. 3, in the power supply 102, delete the upper “-” sign and insert -- + --; and to the left of the “LOAD” box, delete the “-” sign and insert -- + --.

FIG. 9, at the “Vdc” location, delete the upper “-” sign and insert -- + --.

Column 3:

Line 8, after “apparatuses for practicing the invention are” delete “ill ated.” and insert -- illustrated. --

Line 61, after “The inverter circuit is preferably an” delete “II-bridge” and insert -- H-bridge --.

Column 4:

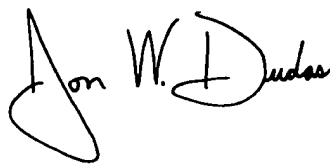
Line 10, after “port” delete “108” and insert -- 109 --.

Column 5:

Line 32, before “FIG. 3.” delete “LEI”.

Signed and Sealed this

Twenty Second Day of April, 2008



JON W. DUDAS
Director of the United States Patent and Trademark Office

(12) **United States Patent**
Ansari et al.

(10) **Patent No.:** **US 6,867,645 B1**
(45) Date of Patent: **Mar. 15, 2005**

(54) **METHOD AND APPARATUS FOR PROVIDING PULSE WIDTH MODULATION**

(75) **Inventors:** **Zahid Ansari, Menlo Park, CA (US);**
Bruce L. Prickett, Fremont, CA (US);
Jonathan Andrew Guy, Austin, TX (US)

(73) **Assignee:** **Daydreams LLC, West Palm Beach, FL (US)**

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) **Appl. No.:** **09/937,680**

(22) **PCT Filed:** **Mar. 28, 2000**

(86) **PCT No.:** **PCT/US00/08562**

§ 371 (c)(1),
 (2), (4) **Date:** **Nov. 29, 2001**

(87) **PCT Pub. No.:** **WO00/59114**

PCT Pub. Date: **Oct. 5, 2000**

Related U.S. Application Data

(60) Provisional application No. 60/164,326, filed on Nov. 7, 1999, provisional application No. 60/163,707, filed on Nov. 5, 1999, provisional application No. 60/164,083, filed on Nov. 5, 1999, and provisional application No. 60/126,770, filed on Mar. 29, 1999.

(51) **Int. Cl.:** **H02M 7/162**

(52) **U.S. Cl.:** **327/588; 327/423; 363/132**
 (58) **Field of Search:** **327/587-588, 327/423, 494, 110; 363/132-133; 332/109**

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,325,112 A	4/1982	Otsuka	363/42
5,021,936 A	6/1991	Nishizawa et al.	363/41
5,373,195 A	12/1994	De Doncker et al.	307/45
5,589,805 A	12/1996	Zuraski et al.	322/109
5,710,699 A	1/1998	King et al.	363/132
5,767,740 A	6/1998	Fogg	310/10
6,005,316 A	12/1999	Harris	310/90.5
6,031,738 A	2/2000	Lipo et al.	363/37

* cited by examiner

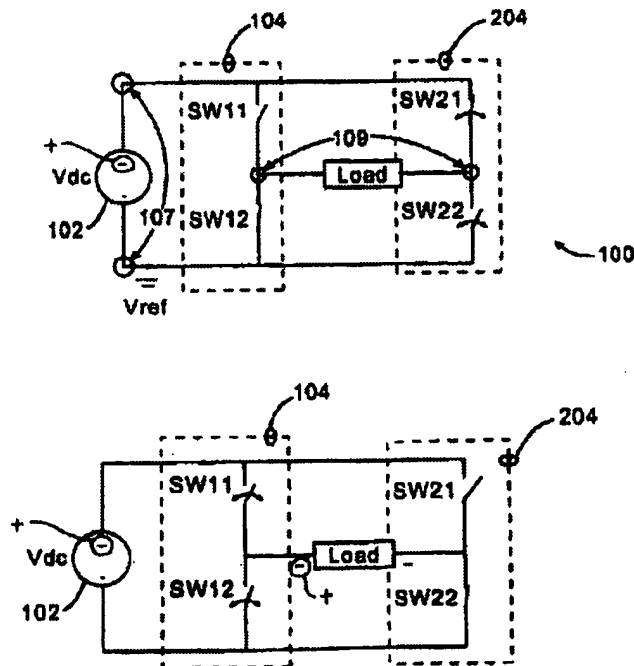
Primary Examiner—Quan Tra

(74) *Attorney, Agent, or Firm—Winston & Strawn LLP*

(57) **ABSTRACT**

A pulse width modulation scheme allows the creation of a unipolar pulse width modulated output signal. Two switching circuits (104, 204), preferably different legs of an inverter circuit, can operate to not only modulate an input voltage but also to reverse the polarity of the PWM output signal. Both switching circuits can be configured to accomplish both features, thus the switching load is spread out across all four switches.

8 Claims, 7 Drawing Sheets



U.S. Patent

Mar. 15, 2005

Sheet 1 of 7

6,867,645 B1

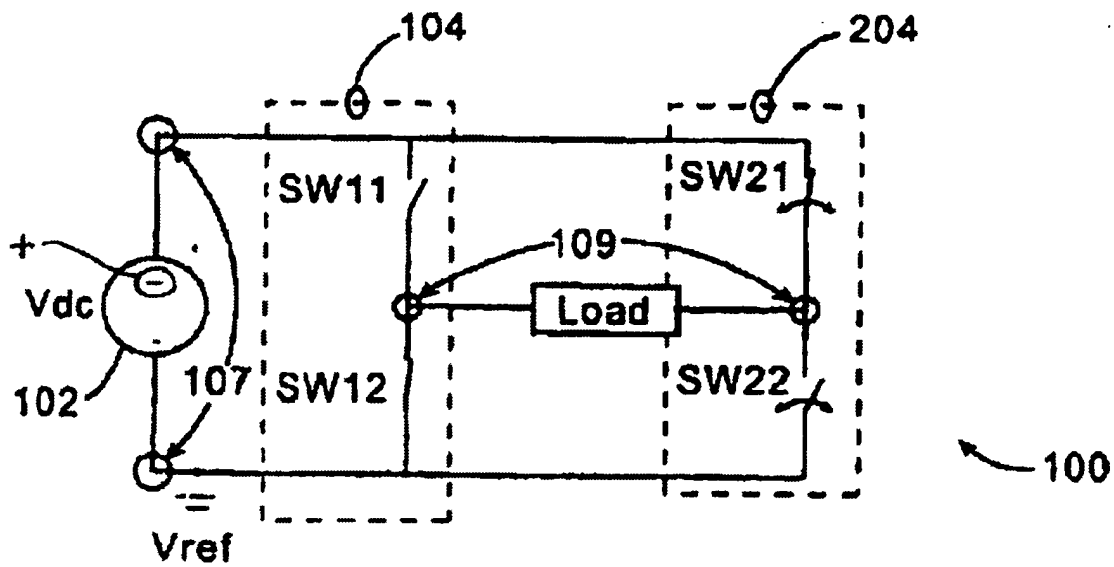


FIG. 1

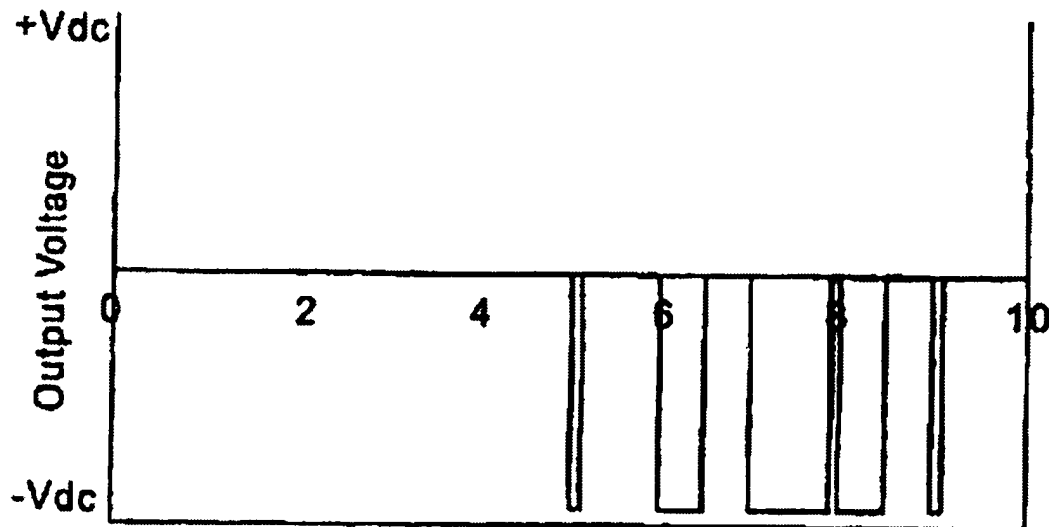


FIG. 2

U.S. Patent

Mar. 15, 2005

Sheet 2 of 7

6,867,645 B1

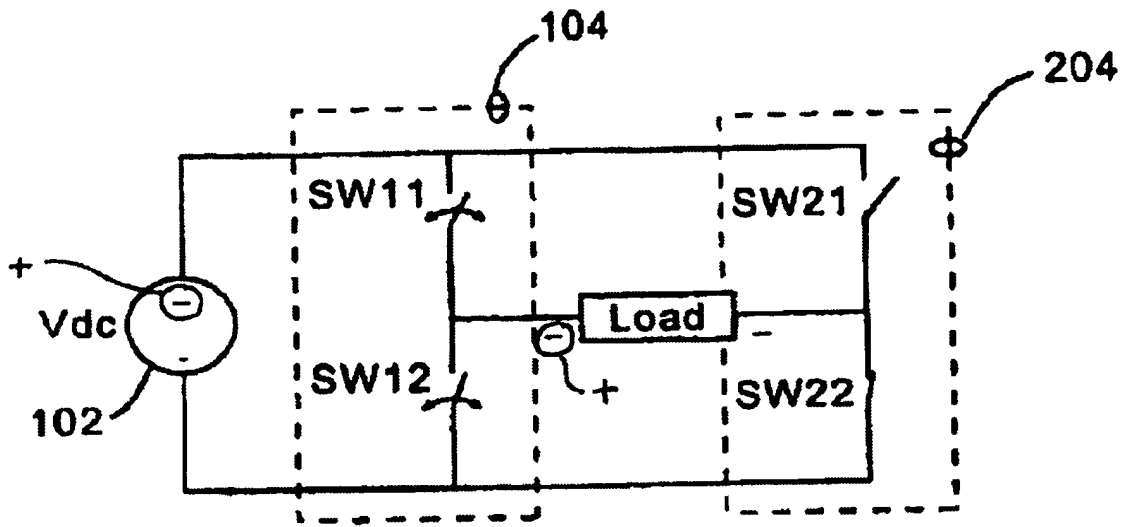


FIG. 3

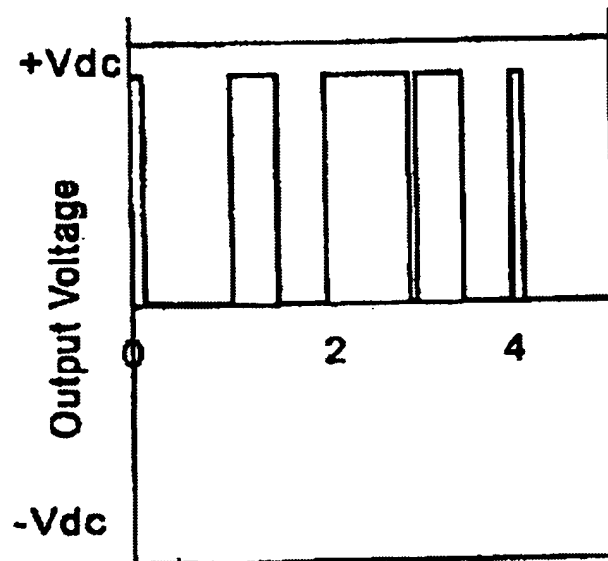


FIG. 4

U.S. Patent

Mar. 15, 2005

Sheet 6 of 7

6,867,645 B1

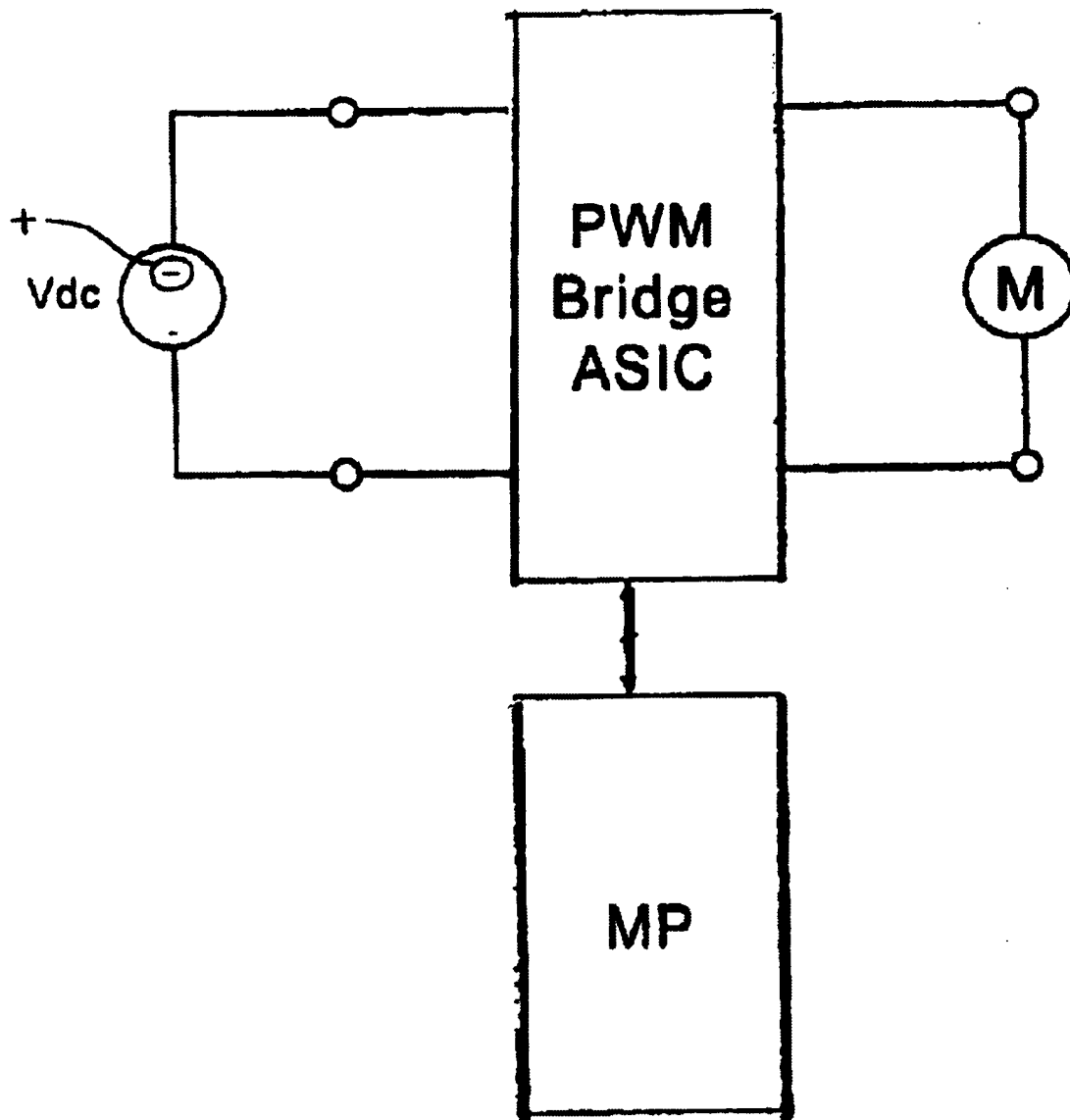


FIG. 9